This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1.(currently amended) A composition ~~for preparing~~ capable of forming a stimuli responsive hybrid hydrogel comprising a polymeric network consisting essentially of a water soluble polymer crosslinked by a protein domain having a coiled-coil structure, wherein said water soluble polymer is a member selected from the group consisting of copolymers of N-substituted methacrylamides, copolymers of N, N-disubstitued acrylamides, hydrophilic esters of methacrylic or acrylic acid, N-vinylpyrrolidone, N-acryloylmorpholine, sulfoethylmethacrylate, acrylic and methacrylic acid, di-block copolymers of polyethylene oxide (PEO) and polypropylene oxide (PPO), and tri-block copolymers of polyethylene oxide (PEO) and polypropylene oxide (PPO).

2.(withdrawn) A composition according to Claim 1 wherein the crosslinking of the protein domain to the polymer is by means of non-covalent bonding selected from the group consisting of chelation bonding, coordination bonding, biotin-aviding bonding, protein-protein interaction and protein-ligand interaction.

3. (withdrawn)A composition according to Claim 2 wherein the crosslinking of the protein domain to the polymer is by means of chelation bonding.

4. (withdrawn)A composition according to Claim 2 wherein the crosslinking of the protein domain to the polymer is by means of biotin-aviding bonding.

5. (withdrawn)A composition according to Claim 2 wherein the crosslinking of the protein domain to the polymer is by means of protein-protein interaction.

6. (withdrawn)A composition according to Claim 2 wherein the crosslinking of the protein domain to the polymer is by means of protein-ligand interaction.

7.(original) A composition according to Claim 1 wherein the crosslinking of the protein domain to the polymer is by means of covalent or coordination bonding.

8.(canceled) A composition according to either Claims 2 or 7 wherein the protein domain has a coiled-coil structure.

9. (withdrawn)A composition according to either Claims 2 or 7 wherein the protein domain is a recombinant protein domain.

10. (cancelled) A composition according to either Claims 2 or 7 wherein the water soluble polymer is a member selected from the group consisting of copolymers of N-substituted methacrylamides, copolymers of N, N-disubstitued acrylamides, hydrophilic esters of

methacrylic or acrylic acid, N-vinylpyrrolidone, N-acryloylmorpholine, sulfoethylmethacrylate, acrylic and methacrylic acid, di-block copolymers of polyethylene oxide (PEO) and polypropylene oxide (PPO), and tri-block copolymers of polyethylene oxide (PEO) and polypropylene oxide (PPO) and the derivatives thereof.

11. (withdrawn) A composition according to Claim 10 wherein the water soluble polymer is an N-substituted methacrylamide and the derivatives thereof.

12. (currently amended) A composition according to Claim ~~11~~ 10 wherein the N-substituted methacrylamide is a member selected from the group consisting of N-(2-hydroxypropyl)methacrylamide (HPMA), copolymers of N-(N',N'-dicarboxymethylaminopropyl) methacrylamide (DAMA), and copolymers of HPMA and N-(3-aminopropyl)methacrylamide ~~and the derivatives thereof~~.

13. (currently amended) A composition according to Claim ~~10~~ 1 wherein the water soluble polymer is a member selected from the group consisting of di-block copolymers of polyethylene oxide (PEO) and polypropylene oxide (PPO), tri-block copolymers of polyethylene oxide (PEO) and polypropylene oxide (PPO) ~~and the derivatives thereof~~.

14. (currently amended) A composition according to Claim ~~10~~ 1 wherein the water soluble polymer is copolymer of a member selected from the group consisting N, N-disubstitued acrylamides, hydrophilic esters of methacrylic or acrylic acid, N-vinylpyrrolidone, N-acryloylmorpholine, sulfoethylmethacrylate, acrylic and methacrylic acid ~~and the derivatives thereof~~.

15. (currently amended) A composition according to ~~either Claims 2 or 7~~ Claim 1 wherein the molar ratio of the water soluble polymer to the crosslinking protein domain is within a range of about 1:1 ~~and~~ to 1:500.

16.(original) A composition according to Claim 15 wherein the molar ratio of the water soluble polymer to the crosslinking protein domain is within a range of about 1:1 to 1:300.

17. (currently amended) A composition according to ~~either Claims 2 or 7~~ Claim 1 further comprising a bioactive agent.

18. (original)A composition according to 17 wherein the bioactive agent is an oligo- or poly-peptide.

19. (withdrawn) A composition according to 18 wherein the peptide is conjugated with the crosslinking protein domain.

20. (withdrawn) A composition according to 17 wherein the bioactive agent is DNA or RNA.

21. (original) A stimuli responsive hydrogel comprising the composition of claim 1 in a three dimensional aqueous solution swelled state.

22. (withdrawn) A stimuli responsive hydrogel according to Claim 21 wherein the crosslinking of the protein domain to the polymer is by means of non-covalent bonding selected from the group consisting of chelation bonding, coordination bonding, biotin-aviding bonding, protein-protein interaction and protein-ligand interaction.

23. (withdrawn) A stimuli responsive hydrogel according to Claim 22 wherein the crosslinking of the protein domain to the polymer is by means of chelation bonding.

24. (withdrawn) A stimuli responsive hydrogel according to Claim 22 wherein the crosslinking of the protein domain to the polymer is by means of biotin-aviding bonding.

25. (withdrawn) A stimuli responsive hydrogel according to Claim 22 wherein the crosslinking of the protein domain to the polymer is by means of protein-protein interaction.

26. (withdrawn) A stimuli responsive hydrogel according to Claim 22 wherein the crosslinking of the protein domain to the polymer is by means of protein-ligand interaction.

27.(original) A stimuli responsive hydrogel according to Claim 21 wherein the crosslinking of the protein domain to the polymer is by means of covalent or coordination bonding.

28.(cancelled) A stimuli responsive hydrogel according to either Claims 21 or 27 wherein the protein domain has a coiled-coil structure.

29. (withdrawn) A stimuli responsive hydrogel according to either Claims 21 or 27 wherein the protein domain is a recombinant protein domain.

30. (cancelled) A stimuli responsive hydrogel according to either Claims 21 or 27 wherein the water soluble polymer is a member selected from the group consisting of copolymers of N-substituted methacrylamides, copolymers of N, N-disubstitued acrylamides, hydrophilic esters of methacrylic or acrylic acid, N-vinylpyrrolidone, N-acryloylmorpholine, sulfoethylmethacrylate, acrylic and methacrylic acid, di-block copolymers of polyethylene oxide (PEO) and polypropylene oxide (PPO), and tri-block copolymers of polyethylene oxide (PEO) and polypropylene oxide (PPO) and the derivatives thereof.

31. (withdrawn) A stimuli responsive hydrogel according to Claim 30 wherein the water soluble polymer is an N-substituted methacrylamide and the derivatives thereof.

32. (currently amended) A stimuli responsive hydrogel according to Claim ~~31~~ 21 wherein the N-substituted methacrylamide is a member selected from the group consisting of N-(2-

hydroxypropyl)methacrylamide (HPMA), copolymers of N-(N',N'-dicarboxymethylaminopropyl) methacrylamide (DAMA), and copolymers of HPMA and N-(3-aminopropyl)methacrylamide ~~and the derivatives thereof~~.

33. (currently amended) A stimuli responsive hydrogel according to Claim ~~30~~ 21 wherein the water soluble polymer is a member selected from the group consisting of di-block copolymers of polyethylene oxide (PEO) and polypropylene oxide (PPO), tri-block copolymers of polyethylene oxide (PEO) and polypropylene oxide (PPO) ~~and the derivatives thereof~~.

34. (currently amended) A stimuli responsive hydrogel according to Claim ~~30~~ 21 wherein the water soluble polymer is a copolymer of a member selected from the group consisting N, N-disubstitued acrylamides, hydrophilic esters of methacrylic or acrylic acid, N-vinylpyrrolidone, N-acryloylmorpholine, sulfoethylmethacrylate, acrylic and methacrylic acid ~~and the derivatives thereof~~.

35. (currently amended) A stimuli responsive hydrogel according to ~~either~~ Claim 21 ~~or 27~~ wherein the molar ratio of the water soluble polymer to the crosslinking protein domain is within a range of about 1:1 ~~and~~ to 1:500.

36. (currently amended) A stimuli responsive hydrogel according to Claim 35 wherein the ~~malor~~ molar ratio of the water soluble polymer to the crosslinking protein domain is within a range of about 1:1 ~~and~~ to 1:300.

37. (currently amended) A stimuli responsive hydrogel according to ~~either~~ Claim 21 ~~or 27~~ further comprising a bioactive agent.

38. (currently amended) A stimuli responsive hydrogel according to Claim 37 wherein the bioactive agent is an oligo- or poly- peptide.

39. (withdrawn)A stimuli responsive hydrogel according to 38 wherein the peptide is conjugated the crosslinking protein domain.

40. (withdrawn)A stimuli responsive hydrogel according to 37 wherein the bioactive agent is DNA or RNA molecule.

41. (currently amended) A stimuli responsive hydrogel according to Claim 37 wherein the bioactive agent is ~~saluted~~ dissolved in ~~the~~ an aqueous solution.

42. (currently amended) A stimuli responsive hydrogel according to ~~either~~ Claim 21 ~~or 27~~ wherein the aqueous solution in an equilibrium swollen state is within a range of between 1 to 99% (w/w).

43. (currently amended) A stimuli responsive hydrogel according to ~~either~~ Claims 42 ~~or 27~~

wherein the aqueous solution in an equilibrium swollen state is within a range of between 5 to 99% (w/w).

44. (currently amended) A stimuli responsive hydrogel according to ~~either~~ Claims 43 ~~or 27~~ wherein the aqueous solution in an equilibrium swollen state is within a range of between 10 to 99% (w/w).